



## QUIZZES

### Unit-6 (Chemical Bonding)



50 Questions



50 min

#### Topics

Unit-6 (Chemical Bonding)

Start Quiz



1/50



50 min



Hint

Q : Which of the following correctly represents the 2<sup>nd</sup> ionization energy of Mg



49 : 56



2/50



50 min



Hint

Q : General electronic configuration of p-block elements are given, Which of the following element has maximum first ionization energy

A  $ns^2, np^2$

B  $ns^2, np^3$

C  $ns^2, np^4$

D  $ns^2, np^1$

49 : 54



3/50



50 min



Hint

Q : The molecule which has strongest bond is

A F-F

B Cl-Cl

C Br-Br

D I-I

1

2

3

4

5

6

7

8

9

49 : 53



4/50



50 min



Hint

Q : In which of the following compound, all carbon atoms show  $sp^2$  hybridization

A Carbon dioxide

B Propene

C 1, 3-Butadiene

D Ethane nitrile

49 : 51



5/50



50 min



Hint

Q : Which of the following is most ionic in nature

A Sodium chloride

B Sodium fluoride

C Sodium bromide

D Sodium iodide

49 : 49



6/50



50 min



Hint

Q : The compound which has maximum electronic repulsions is

A



B



C



D



1

2

3

4

5

6

7

8

9

49 : 48



7/50



50 min



Hint

Q : Octet rule is followed by the central atom of \_\_\_\_\_ molecule

A

$\text{BF}_3$

B

$\text{SO}_2$

C

$\text{SF}_6$

D

$\text{CCl}_4$

49 : 45



8/50



50 min



Hint

Q : Benzene contains delocalized  $\pi$ -electronic cloud due to

A  $sp^2-sp^2$  overlapping

B s-p overlapping

C  $sp^2-s$  overlapping

D  $p_z - p_z$  overlapping



9/50



50 min



Hint

Q :

Some properties are given below. Which corresponds to  $\text{PCl}_3$ ?

- (i)  $\text{sp}^2$  hybridization (ii) Polar (iii) Trigonal pyramidal  
(iv)  $\text{AB}_3$  type molecule

A i, ii, and iii

B ii, iii and iv

C ii and iii

D i, ii, iii and iv

10/50

50 min

Hint

Q : When bond order increases, then bond length becomes \_\_\_\_\_ and bond becomes \_\_\_\_\_

Shorter, stronger

Longer, weaker

Shorter, weaker

Longer, stronger



Info



Sc. min



Hint

Q : The pair of compounds having same geometry and hybridization



SO<sub>3</sub>, NH<sub>3</sub>



H<sub>2</sub>S, H<sub>2</sub>O



CdCl<sub>2</sub>, PCl<sub>3</sub>



SO<sub>2</sub>, BeCl<sub>2</sub>



12/25



50 min



1 min

Q : Possible bonds formed by overlapping of p-p orbitals  
is/are



σ-bond



Both σ and π



π-bond



None of these

13/20

50 min

1 min

Q : % age of covalent bond in  $\text{H}_3\text{O}^+$  is

A 33%

B 25%

C 75%

D 66%

1450

50 min

1 min

Q : Strength of bond depends upon the following factors except

- E.N difference between bonded atoms
- Sizes of the atoms
- Bond length
- Shielding effect



15/50



50 min



1 min

Q : The distance between the nuclei of two atoms forming covalent bond is called



Covalent radius



Bond angle



Atomic radius



Bond length



16/50



50 min



Hint

Q : Which one of the following has minimum electron affinity value



O



Se



S



Te





12 min



50 min



1 hr

Q : Which among the following has net dipole moment

 $\text{CH}_4$  $\text{BF}_3$  $\text{NH}_3$  $\text{CCl}_4$



1 / 50

50 min

Hint

Q : Which overlapping may not lead to sigma bond formation



p-p in fluorine



s-p in hydrogen fluoride



sp<sup>2</sup>-sp<sup>2</sup> in benzene



p-p in ethene



18/50



50 min



Hint

Q : Which of the following molecule contains maximum number of lone pairs



Chlorine



Oxygen



Carbon dioxide



Hydrogen chloride



20/50



50 min



1 min

Q : Correct statement when coordinate covalent bond is formed between  $\text{NH}_3$  and  $\text{BF}_3$



Ammonia is Lewis acid



Fluorine accepts lone pair due to its high electronegativity



Nitrogen of ammonia donates its lone pair to 2p orbital of Boron



Coordinate covalent bond is also called non-polar bond



21/30



50 min



Hint

Q : Which one is  $AB_4$  type molecule

 $\text{SO}_3$  $\text{BF}_3$  $\text{SO}_2$  $\text{H}_2\text{S}$ 

25/50

50 min

1 min

Q : According to VSEPR theory, which is angular in its structure

 BF<sub>3</sub> SO<sub>2</sub> BeCl<sub>2</sub> NH<sub>3</sub>



22/50



50 min



1 min

Q : During formation of ammonium ion from ammonia and hydrogen ion, there is no change in hybridization ( $sp^3$ ) but bond angle is changed from  $107.5^\circ$  in ammonia to almost \_\_\_\_\_ in ammonium ion

A  $104.5^\circ$

B  $120^\circ$

C  $109.5^\circ$

D  $92^\circ$

24/50

50 min

1 min

Q :

In which of the following compound, central element is electron deficient

 CH<sub>4</sub> BF<sub>3</sub> NH<sub>3</sub> SiCl<sub>4</sub>

25/50

50 min

1 min

Q : Which one of the following shows minimum bond angle





Unlocked



50 min



Hint

Q : Which of following pair contains iso-structural species



CH<sub>4</sub> and CH<sub>3</sub><sup>-</sup>



SO<sub>4</sub><sup>2-</sup> and BF<sub>3</sub>



NH<sub>3</sub>, BF<sub>3</sub>



CO<sub>2</sub> and SO<sub>2</sub>



21/50



50 min



1 min

Q : Which of the following compounds is non-polar

CHCl3COSO2CO2



28/60



50 min



1 min

Q :

When the two partially filled atomic orbitals overlap in such a way that probability of finding the electron is maximum around the line joining the two nuclei, the result is the formation of



Pi bond



Sigma bond



Hydrogen bond



Metallic bond





10

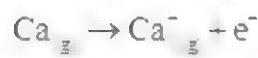


50 min



1 min

Q : Which one of the following processes requires the highest amount of energy



30/50

50 min

1 min

Q : The valence shell is

- The highest energy level occupied by electrons
- The set of orbitals used to make triple bonds
- The orbitals belonging to the entire molecule
- The lowest energy level occupied by electrons



31/50



50 min



1 min

Q :  $\text{CH}_4$  is a nonpolar molecule. Which of the following similar molecules is also non-polar



A  $\text{CH}_3\text{Cl}$



B  $\text{SiH}_3\text{Cl}$



C  $\text{CH}_2\text{Cl}_2$



D  $\text{SiH}_4$

32/50

50 min

1 min

Q : The I.E. of nitrogen is more than that of oxygen due to the

- The smallest size of nitrogen
- The extra stability of the half-filled p orbitals
- More penetrating effect
- The greater attraction of electron by the nucleus



33:50



50 min



1 min

Q : The elements of group \_\_\_\_\_ shows abnormal low values of electron affinity in every period of periodic table



IIIA and VIA



IIA, VA and VIIA



IIA and VIIIA



IIA, VA and VIIIA



34/60



50 min



Hint

Q : The incorrect statement among the following is



A The first ionization energy of Al is less than the first I.E. of Mg



B The second ionization energy of Mg is greater than the second I.E. of Na



C The first ionization energy of Na is less than the first I.E. of Mg



D The third I.E. of Mg is greater than that of Al

36/62

50 min

1 min

Q : Which one of the following will have smallest radius?

 Al<sup>3+</sup> Mg<sup>2+</sup> Si<sup>4+</sup> Na<sup>2+</sup>



36/50



50 min



1 min

Q : Which one of the following molecules has the highest dipole moment

 $\text{H}_2\text{S}$  $\text{H}_2\text{O}$  $\text{SO}_2$  $\text{CS}_2$



37/50

50 min

1 min

Q : All the atoms are coplanar in the molecule\_\_\_\_\_

 CH<sub>4</sub> PH<sub>3</sub> BF<sub>3</sub> NH<sub>3</sub>

38/52

50 min

1 min

Q : Bonding in phosphonium ion is \_\_\_\_\_ percent covalent

25

50

33

75



30/50



50 min



1 min

Q : Formation of MgO is an example of



Ionic bond



Polar covalent bond



Non-polar Covalent bond



Double Covalent bond





40 min



50 min



1 hr

Q : The bond between H-H is



Stronger than the bond between C-C



Weaker than the bond between C-C



Neither stronger nor weaker than the bond between C-C



Not comparable



4/50



50 min



1 min

Q : Which hybrid orbitals are used for bonding in triangular pyramidal molecule

 $sp^2$  $dsp^2$  $sp$  $sp^3$ 



47/50



50 min



1 min

Q : The hybridization state of 'S' in  $\text{SO}_3$  is similar to that of

C in  $\text{C}_2\text{H}_2$ C in  $\text{CO}_2$ C in  $\text{C}_2\text{H}_6$ C in  $\text{C}_2\text{H}_4$ 



43/50



50 min



100%

Q : Which of the following is NOT tetrahedral



44/50

50 min

1 min

Q : Which one is correct dot and cross diagram of  $\text{CO}_2$





45/50



50 min



1 min

Q : The electron affinity is the measure of the attraction of the nucleus of an atom for



Valance electron



Inner shell electron



Extra incoming electron



Last electron



46/50



50 min



Hint

Q : The ionization energies of an element are given below



The element X may belong to



IVA



IIIA



IIA



IA





47/50



50 min



1 min

Q : In the resonance structure of benzene the number of s-bonds and p delocalized electrons are respectively



12 and 6



6 and 6



6 and 3



12 and 3



18/60



50 min



1 min

Q : The hybridization associated with the central atom of a molecule in which all the bond angles are  $120^\circ$  is



sp

sp<sup>3</sup>sp<sup>2</sup>dsp<sup>3</sup>

40/50

50 min

1 min

Q :

Choose the species that is incorrectly matched with the shape of the central atom

- CF<sub>4</sub> tetrahedral
- H<sub>2</sub>O tetrahedral
- BeCl<sub>2</sub> linear
- NH<sub>3</sub> pyramidal



50/50



50 min



Reset

Q : Correct order of H-N-H angle for the species  $\text{NH}_3$ ,  $\text{NH}_4^+$  and  $\text{NH}_2^-$



$\text{NH}_2^- > \text{NH}_3 > \text{NH}_4^+$



$\text{NH}_4^+ > \text{NH}_3 > \text{NH}_2^-$



$\text{NH}_3 > \text{NH}_4^+ > \text{NH}_2^-$



$\text{NH}_3 > \text{NH}_2^- > \text{NH}_4^+$



## QUIZ RESULT

Unit-6 (Chemical Bonding)



300



50 - 0



300



50 - 0



0 - 0



300



Result Detail



- Correct
- Incorrect
- Unattempted

0

0

0

Correctly

Correct

Unattempted

Incorrect

1/10

Q : Which of the following correctly represents the 2<sup>nd</sup> ionization energy of Mg



Correct

Unattempted

Incorrect

2/100

Q : General electronic configuration of p-block elements are given, Which of the following element has maximum first ionization energy

 A)  $ns^2, np^2$  B)  $ns^2, np^3$  C)  $ns^2, np^4$  D)  $ns^2, np^1$

A) F-F

B) Cl-Cl

C) Br-Br

D) I-I

Correct

Unattempted

Incorrect

4 / 30

Q : In which of the following compound, all carbon atoms show  $sp^2$  hybridization

A Carbon dioxide

B Propene

C 1, 3-Butadiene

D Ethane nitrile

Correct

Unanswered

Incorrect

5/30

Q : Which of the following is most ionic in nature

A Sodium chloride

B Sodium fluoride

C Sodium bromide

D Sodium iodide

Correct

Unattempted

Incorrect

3/30

Q : The compound which has maximum electronic repulsions is

H<sub>2</sub>O

NH<sub>3</sub>

NH<sub>4</sub><sup>+</sup>

CH<sub>4</sub>

Correct

Incorrect

Unattempted

7/10

Q : Octet rule is followed by the central atom of \_\_\_\_\_ molecule

 BF<sub>3</sub> SO<sub>2</sub> SF<sub>6</sub> CCl<sub>4</sub>



Correct



Unattempted



Incorrect



8/80

Q : Benzene contains delocalized  $\pi$ -electronic cloud due to



A  $sp^2-sp^2$  overlapping



B s-p overlapping



C  $sp^2-s$  overlapping



D  $p_z - p_z$  overlapping



Correct



Unattempted



Incorrect



9/10

Q :

Some properties are given below. Which corresponds to  $\text{PCl}_3$ ?

- (i)  $\text{sp}^2$  hybridization (ii) Polar  
(iv)  $\text{AB}_3$  type molecule (iii) Trigonal pyramidal



i, ii, and iii



ii, iii and iv



ii and iii



i, ii, iii and iv

 Correct

Unattempted

 Incorrect 10/10

Q : When bond order increases, then bond length becomes \_\_\_\_\_ and bond becomes \_\_\_\_\_



Shorter, stronger



Longer, weaker



Shorter, weaker



Longer, stronger

Correct

Unanswered

Incorrect

Help

Q : The pair of compounds having same geometry and hybridization

 SO<sub>3</sub>, NH<sub>3</sub> H<sub>2</sub>S, H<sub>2</sub>O CdCl<sub>2</sub>, PCl<sub>3</sub> SO<sub>2</sub>, BeCl<sub>2</sub>

 Correct Unattempted Incorrect 12/15

Q : Possible bonds formed by overlapping of p-p orbitals is/are

 Bond Both sigma and pi pi-bond None of these

QUESTION (Chemical Bonding)

 Correct

 Unattempted

 Incorrect

 1/50

Q : % age of covalent bond in  $\text{H}_3\text{O}^+$  is

 A

 B

 C

 D

Correct

Unattempted

Incorrect

14/20

Q : Strength of bond depends upon the following factors except

- E.N difference between bonded atoms
- Sizes of the atoms
- Bond length
- Shielding effect

Correct

Incorrect

Unanswered

Q 10/10

Q : The distance between the nuclei of two atoms forming covalent bond is called

A Covalent radius

B Bond angle

C Atomic radius

D Bond length

Correct

Unattempted

Incorrect

Info

Q : Which one of the following has minimum electron affinity value

O

Se

S

Te

Correct

Unattempted

Incorrect

7/10

Q : Which among the following has net dipole moment

A  $\text{CH}_4$

B  $\text{BF}_3$

C  $\text{NH}_3$

D  $\text{CCl}_4$

Correct

Unattempted

Incorrect

8/20

Q : Which overlapping may not lead to sigma bond formation

A p-p in fluorine

B s-p in hydrogen fluoride

C  $sp^2-sp^2$  in benzene

D p-p in ethene

Correct

Unattempted

Incorrect

10/10

Q : Which of the following molecule contains maximum number of lone pairs

Chlorine

Oxygen

Carbon dioxide

Hydrogen chloride

Correct

Unattempted

Incorrect

20/20

Q : Correct statement when coordinate covalent bond is formed between  $\text{NH}_3$  and  $\text{BF}_3$

A Ammonia is Lewis acid

B Fluorine accepts lone pair due to its high electronegativity

C Nitrogen of ammonia donates its lone pair to 2p orbital of Boron

D Coordinate covalent bond is also called non-polar bond

Content

Unattempted

Incorrect

21/50

Q : Which one is  $AB_4$  type molecule

 A  $SO_3$  B  $BF_3$  C  $SO_2$  D  $H_2S$

Correct

Unattempted

Incorrect

22/20

Q : According to VSEPR theory, which is angular in its structure

 BF<sub>3</sub> SO<sub>2</sub> BeCl<sub>2</sub> NH<sub>3</sub>

Correct

Unmarked

Incorrect

23/20

Q : During formation of ammonium ion from ammonia and hydrogen ion, there is no change in hybridization ( $sp^3$ ) but bond angle is changed from  $107.5^\circ$  in ammonia to almost \_\_\_\_\_ in ammonium ion

104.5°

120°

109.5°

92°

Correct

Incorrect

Unattempted

2.1/3.0

Q :

In which of the following compound, central element is electron deficient

A  $\text{CH}_4$

B  $\text{BF}_3$

C  $\text{NH}_3$

D  $\text{SiCl}_4$

Correct

Unattempted

Incorrect

25/30

Q : Which one of the following shows minimum bond angle

A  $\text{BF}_3$

B  $\text{NF}_3$

C  $\text{CH}_4$

D  $\text{H}_2\text{O}$

Correct

Incorrect

Unattempted

26/30

Q : Which of following pair contains iso-structural species

A  $\text{CH}_4$  and  $\text{CH}_3^-$

B  $\text{SO}_4^{2-}$  and  $\text{BF}_4^-$

C  $\text{NH}_3$ ,  $\text{BF}_3$

D  $\text{CO}_2$  and  $\text{SO}_2$

Correct

Incorrect

Unattempted

27/50

Q : Which of the following compounds is non-polar

 A CHCl<sub>3</sub>

B CO

 C SO<sub>2</sub> D CO<sub>2</sub>

Element

Unattempted

Incorrect

20/50

Q :

When the two partially filled atomic orbitals overlap in such a way that probability of finding the electron is maximum around the line joining the two nuclei, the result is the formation of

A Pi bond

B Sigma bond

C Hydrogen bond

D Metallic bond

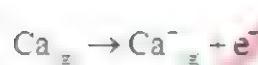
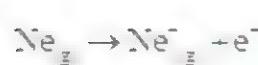
Correct

Unattempted

Incorrect

27/50

Q : Which one of the following processes requires the highest amount of energy



Correct

Unattempted

Incorrect

20/30

Q : The valence shell is

- A The highest energy level occupied by electrons
- B The set of orbitals used to make triple bonds
- C The orbitals belonging to the entire molecule
- D The lowest energy level occupied by electrons

Correct

Unattempted

Incorrect

31/50

Q :  $\text{CH}_4$  is a nonpolar molecule. Which of the following similar molecules is also non-polar

 A  $\text{CH}_3\text{Cl}$  B  $\text{SiH}_3\text{Cl}$  C  $\text{CH}_2\text{Cl}_2$  D  $\text{SiH}_4$

Correct

Unattempted

Incorrect

32/50

Q : The I.E. of nitrogen is more than that of oxygen due to the

- A The smallest size of nitrogen
- B The extra stability of the half-filled p orbitals
- C More penetrating effect
- D The greater attraction of electron by the nucleus



Content



Unattempted



Incorrect



32/50

Q : The elements of group \_\_\_\_\_ shows abnormal low values of electron affinity in every period of periodic table



IIIA and VIA



IIA, VA and VIIA



IIA and VIIIA



IIA, VA and VIIIA

Correct

Unattempted

Incorrect

34/30

Q : The incorrect statement among the following is

1 The first ionization energy of Al is less than the first I.E. of Mg

2 The second ionization energy of Mg is greater than the second I.E. of Na

3 The first ionization energy of Na is less than the first I.E. of Mg

4 The third I.E. of Mg is greater than that of Al

Correct

Incorrect

Unattempted

10/10

Q : Which one of the following will have smallest radius?

 A  $\text{Al}^{3+}$  B  $\text{Mg}^{2+}$  C  $\text{Si}^{4+}$  D  $\text{Na}^{2+}$

Correct

Unattempted

Incorrect

36 / 50

Q : Which one of the following molecules has the highest dipole moment

 A  $\text{H}_2\text{S}$  B  $\text{H}_2\text{O}$  C  $\text{SO}_2$  D  $\text{CS}_2$

Correct

Unattempted

Incorrect

37/50

Q : All the atoms are coplanar in the molecule \_\_\_\_\_

A  $\text{CH}_4$

B  $\text{PH}_3$

C  $\text{BF}_3$

D  $\text{NH}_3$

Connect

Incomplete

Unanswered

21/30

Q : Bonding in phosphonium ion is \_\_\_\_\_ percent covalent

A 25

B 50

C 33

D 75

 Correct

 Incorrect

 Unattempted

 37/50

Q : Formation of MgO is an example of

 Ionic bond

 Polar covalent bond

 Non-polar Covalent bond

 Double Covalent bond

Correct

Unattempted

Incorrect

40/10

Q : The bond between H-H is

- A Stronger than the bond between C-C
- B Weaker than the bond between C-C
- C Neither stronger nor weaker than the bond between C-C
- D Not comparable

Correct

Unattempted

Incorrect

4/10

Q : Which hybrid orbitals are used for bonding in triangular pyramidal molecule

 $sp^2$   $dsp^2$   $sp$   $sp^3$

Correct

Unattempted

Incorrect

41/50

Q : The hybridization state of 'S' in  $\text{SO}_3$  is similar to that of

 A C in  $\text{C}_2\text{H}_2$  B C in  $\text{CO}_2$  C C in  $\text{C}_2\text{H}_6$  D C in  $\text{C}_2\text{H}_4$

 Correct Unattempted Incorrect 43/50

Q : Which of the following is NOT tetrahedral

 A  $\text{BF}_4^-$  B  $\text{SO}_4^{2-}$  C  $\text{NH}_4^+$  D  $\text{CO}_3^{2-}$

Correct

Unattempted

Incorrect

41/50

Q : Which one is correct dot and cross diagram of  $\text{CO}_2$





Correct



Unattempted



Incorrect



45/50

Q : The electron affinity is the measure of the attraction of the nucleus of an atom for



Valance electron



Inner shell electron



Extra incoming electron



Last electron

Correct

Unattempted

Incorrect

48/50

Q : The ionization energies of an element are given below



The element X may belong to

IVA

IIIA

II A

IA

 Correct Unattempted Incorrect Q 47/50

Q : In the resonance structure of benzene the number of s-bonds and p delocalized electrons are respectively

A 12 and 6

B 6 and 6

C 6 and 3

D 12 and 3



Correct



Unattempted



Incorrect



48/50

Q : The hybridization associated with the central atom of a molecule in which all the bond angles are  $120^\circ$  is

A sp

B  $sp^3$

C  $sp^2$

D  $dsp^3$

 Correct Unattempted Incorrect Q 49/50

Q :

Choose the species that is incorrectly matched with the shape of the central atom

A  $\text{CF}_4$  tetrahedral

B  $\text{H}_2\text{O}$  tetrahedral

C  $\text{BeCl}_2$  linear

D  $\text{NH}_3$  pyramidal



Correct



Unattempted



Incorrect



50/50

Q : Correct order of H-N-H angle for the species  $\text{NH}_3$ ,  $\text{NH}_4^+$  and  $\text{NH}_2^-$

**A** $\text{NH}_2^- > \text{NH}_4^+ > \text{NH}_3$ **B** $\text{NH}_4^+ > \text{NH}_3 > \text{NH}_2^-$ **C** $\text{NH}_3 > \text{NH}_4^+ > \text{NH}_2^-$ **D** $\text{NH}_3 > \text{NH}_2^- > \text{NH}_4^+$